

Hyperconnectivity

Hyperconnectivity is a common response to neurological disruption and that it may be differentially observable across brain regions.

Tourette syndrome (TS) is a **neurodevelopmental disorder** characterized by motor and vocal **tics**, which is often associated with psychiatric comorbidities. **Dysfunction** of **basal ganglia pathways** might account for the wide spectrum of symptoms in TS patients. Although psychiatric symptoms may be related to **limbic networks**, the specific contribution of different limbic structures remains unclear.

Temiz et al. used **tractography** to investigate cortical **connectivity** with the striatal area (**caudate**, **putamen**, core and shell of the **nucleus accumbens**), the **subthalamic nucleus** (STN), and the adjacent medial **subthalamic** region (MSR) in 58 TS patients and 35 healthy volunteers. 82% of TS patients showed psychiatric comorbidities, with significantly higher levels of **anxiety** and **impulsivity** compared to controls. **Tractography** analysis revealed significantly increased limbic cortical connectivity of the left MSR with the **entorhinal cortex** (BA34), **insular cortex** (BA48), and **temporal cortex** (BA38) in TS patients compared to controls. Furthermore, they found that left insular-STN connectivity was positively correlated with impulsivity scores for all subjects and with anxiety scores for all subjects, particularly for TS. The study highlights a heterogeneous modification of limbic **structure connectivity** in TS, with specific abnormalities found for the **subthalamic area**. Abnormal **connectivity** with the **insular cortex** might underpin the higher level of **impulsivity** and **anxiety** observed in **Tourette syndrome** ¹⁾.

¹⁾

Temiz G, Atkinson-Clement C, Lau B, Czernecki V, Bardinet E, Francois C, Worbe Y, Karachi C. Structural **hyperconnectivity** of the **subthalamic area** with limbic cortices underpins **anxiety** and **impulsivity** in **Tourette syndrome**. Cereb Cortex. 2022 Oct 30:bhac408. doi: 10.1093/cercor/bhac408. Epub ahead of print. PMID: 36310093.

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